WHO GFN EQAS and the Country Databank (CDB)

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WHO GFN EQAS

and the

Country Databank (CDB)

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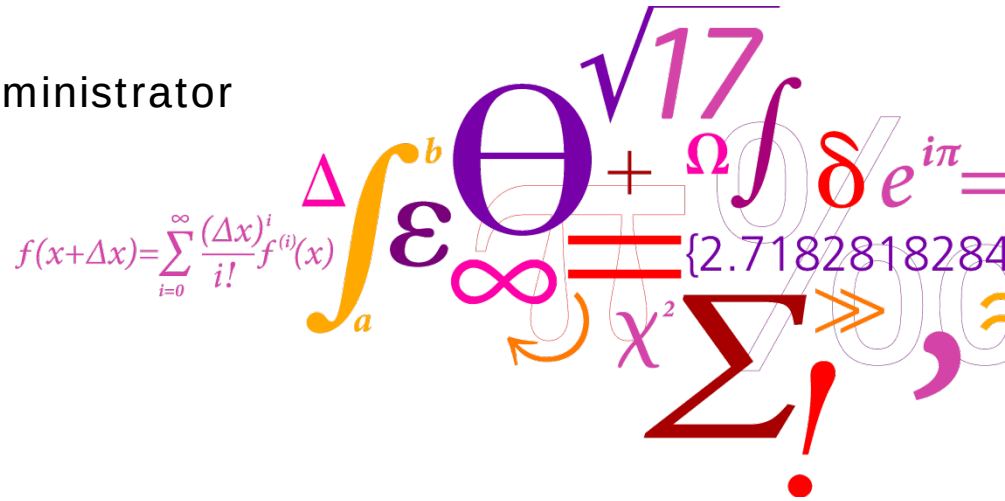
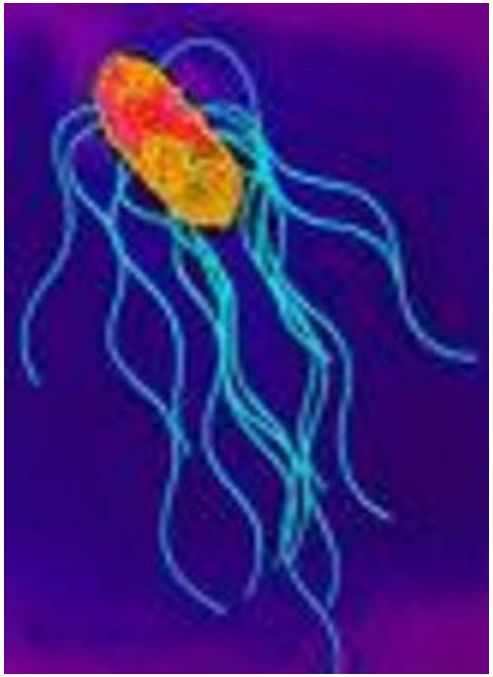


DTU Food
National Food Institute

External Quality Assurance System (EQAS)



WHO and CDC survey 191 national labs to assess capacity and the burden of *Salmonella* (Herikstad *et al*, 2002)

Results: 69 (66%) of 104 responding countries conduct routine *Salmonella* serotyping

Conclusion: need to increase lab capacity to improve surveillance and control

EQAS – objectives

- To have laboratories evaluate their performance of serotyping and antimicrobial susceptibility testing (AST)
- To assess the quality of *Salmonella* serotyping and AST in laboratories worldwide
- To improve quality of surveillance data
- To evaluate the effect of the training courses
- To identify barriers for serotyping and AST

EQAS – the system

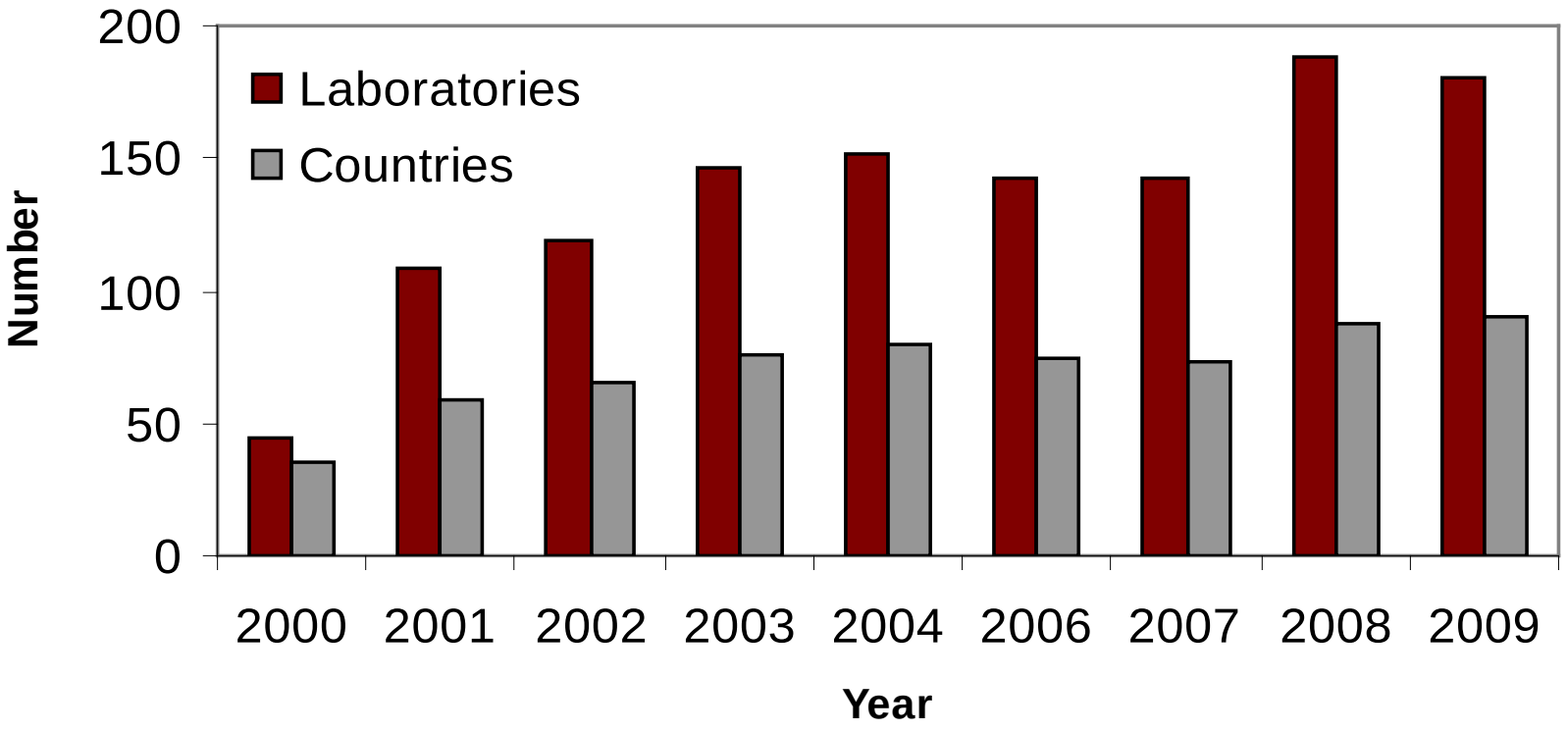
- Serotyping and AST of eight *Salmonella* strains
- Serotyping and AST of four *Shigella* strains
- Identification and AST of two *Campylobacter* strains
- Identification of one unknown sample
- Supply labs with ref. strain ATCC 25922 and ATCC 33560
- Results and comments submitted through a web-based data entry program, using individual logins
- Instant individual evaluation reports with suggestions for corrective actions
- Yearly over-all evaluation reports on the web

EQAS – participation

- In EQAS 2010, 188 laboratories registered for participation
- 178 laboratories from 91 countries submitted results

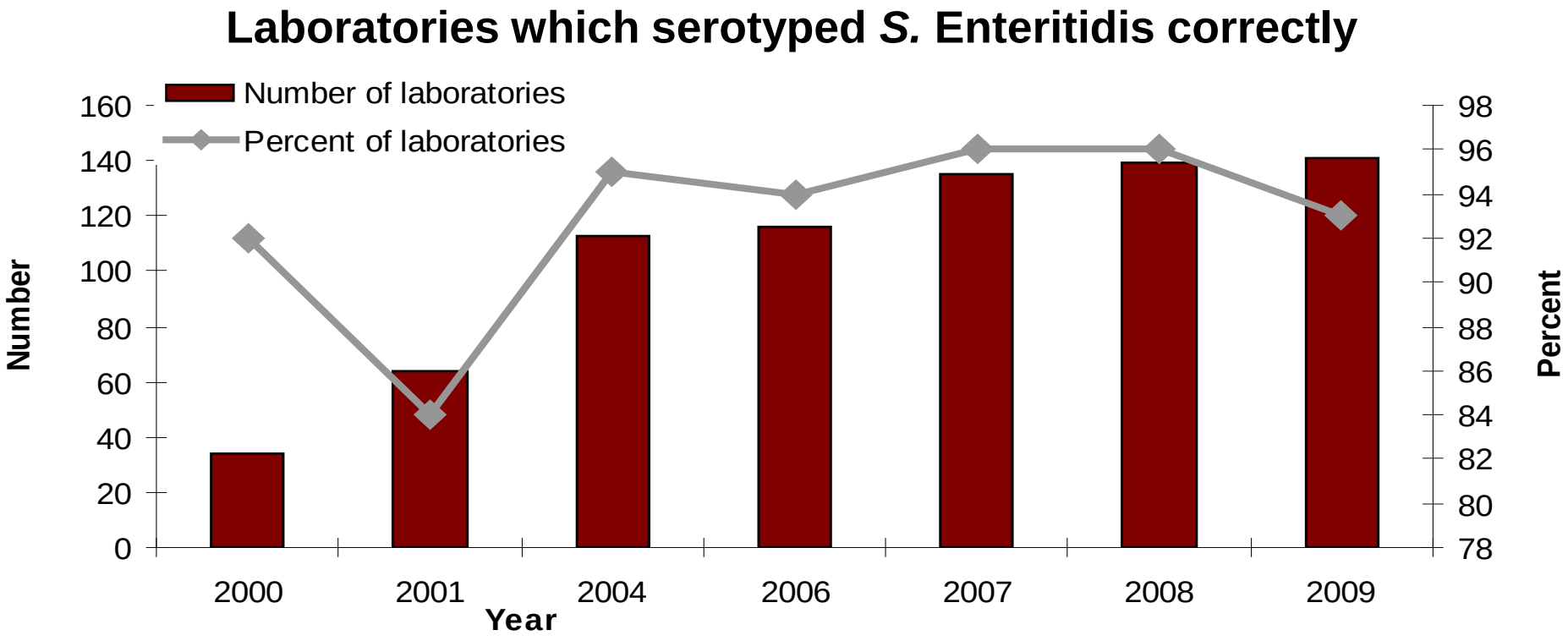
Countries from which one or more laboratories have participated in the WHO GFN EQAS in any of the iterations from 2001 to 2009

EQAS – no. of participants



EQAS – internal reference strain

Salmonella Enteritidis is included as an internal reference (should be easy to serotype based on the sera needed)



EQAS – capacity (no. of strains)

Year	Labs serotyping all provided strains		Correct serotyping results	
	n	%	n	%
2000	34	92	165	76
2001	79	82	513	72
2002	80	81	668	91
2003	69	54	692	80
2004	78	61	701	81
2006	105	81	808	85
2007	109	78	920	88
2008	100	66	888	83
2009	119	83	974	86
Overall	86	75	703	82

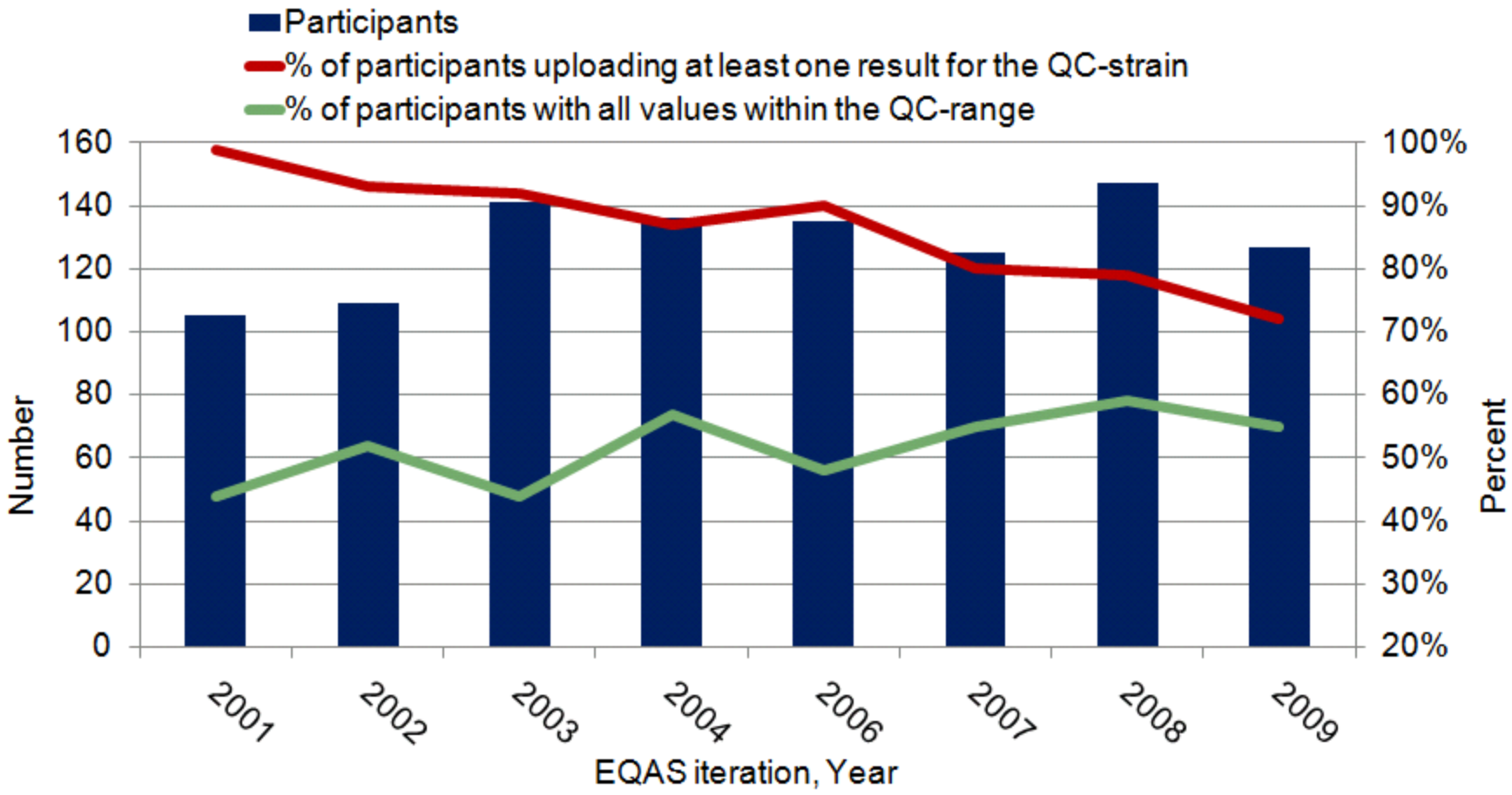
EQAS – capacity (correctly tested strains)

Number of correct serotypes	Number of participating laboratories EQAS 2009	
	n	%
8	76	50
7	29	19
6	7	5
5	13	8
4	5	3
3	7	5
2	5	3
1	6	4
0	5	3
In total	N=153	100%

69% had tested seven or eight strains correct (the acceptance threshold)

ATCC 25922 – QC strain for AST

Participating laboratories testing the QC-reference strain (*E. coli* ATCC 25922)



AST – deviations

- Overall, the results of the test strains seem to be fine with 94% correctly tested isolates (all participants)

- In 2009, only 3% critical deviations was observed (all participants)

EQAS iteration	No. of labs	Performance	OVERALL
2009	153	No. of tests	12707
		% critical deviations	3
		% total deviations	6

AMP	CAZ	CHL	CIP	CRO	CTX	GEN	NAL	SMX	STR	SXT	TET	TMP
1206	921	1108	1190	775	1009	1143	1095	624	864	1042	1114	616
3	1	1	8	0	1	2	1	7	9	3	4	1
6	1	2	10	1	2	3	3	9	30	4	10	1

Reference laboratories

Should participate in relevant ring trials

- Define accept criteria for performance in the ring trial
- Evaluate the results
- Document any corrective actions

In general - when deviations on QC-strains show

Re-testing should be performed (after sub-cultivation)

- One dilution-step outside the acceptable QC range can be accepted, but….

  …if the same deviation appears over time or for other QC strains too, you should take action!

Trouble shooting

If QC results are out of the acceptable range, consider:

- Switch of strains?
- Contamination?
- Weak growth or wrong inoculation?
- Incubation temperature and -time?
- New lots of broth or other media/reagents?
- Use of expired disks, broth, MIC-panel or other reagents?

EQAS – additionally

Individual certificates sent to all participating laboratories

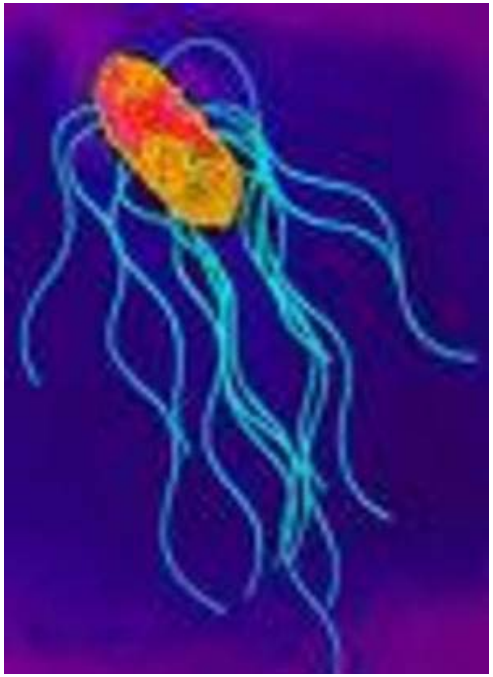
The 2010 EQAS report: ready by ~August 2011

Two publications available, high-lighting the EQAS results of seven iterations from 2000–2007 on AST and serotyping:

- Results of use of WHO Global Salm-Surv external quality assurance system for antimicrobial susceptibility testing of *Salmonella* isolates from 2000 to 2007.
  J Clin Microbiol. 2009 Jan;47(1):79-85

- WHO Global Salm-Surv external quality assurance system for serotyping of *Salmonella* isolates from 2000 to 2007.
  J Clin Microbiol. 2009 Sep;47(9):2729-36

Country Databank - goal

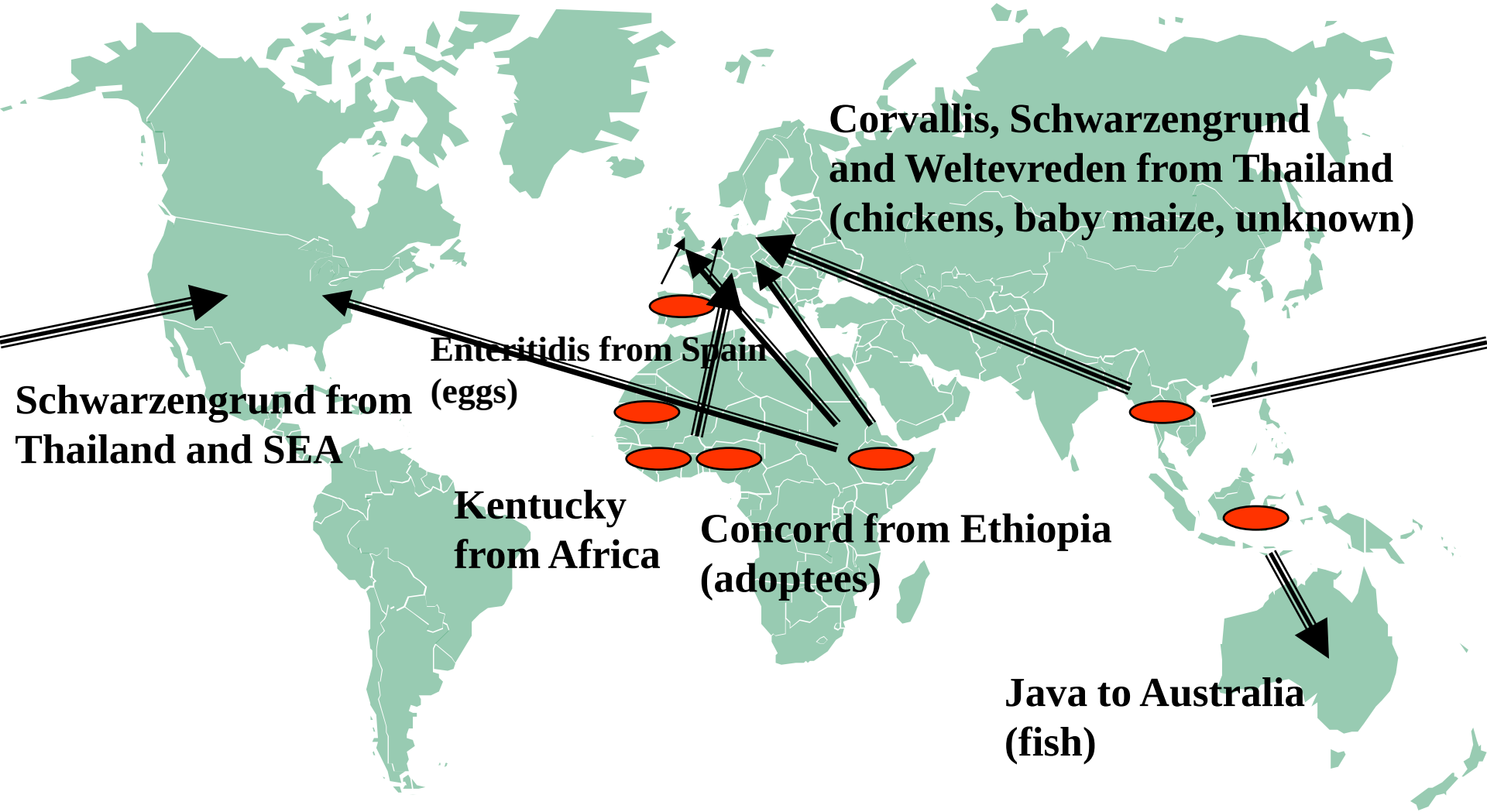


The goal of the CDB is

- To improve the understanding of the global and regional epidemiology of *Salmonella* serotypes and lead to the prevention and control of this pathogen

- To provide food safety professionals with contact information of all WHO GFN members around the world

Examples of global epidemiology



Country Databank – members

General member
- Maintain personal contact information

General Institution Representative
- Maintain personal contact information
- Upload institution data

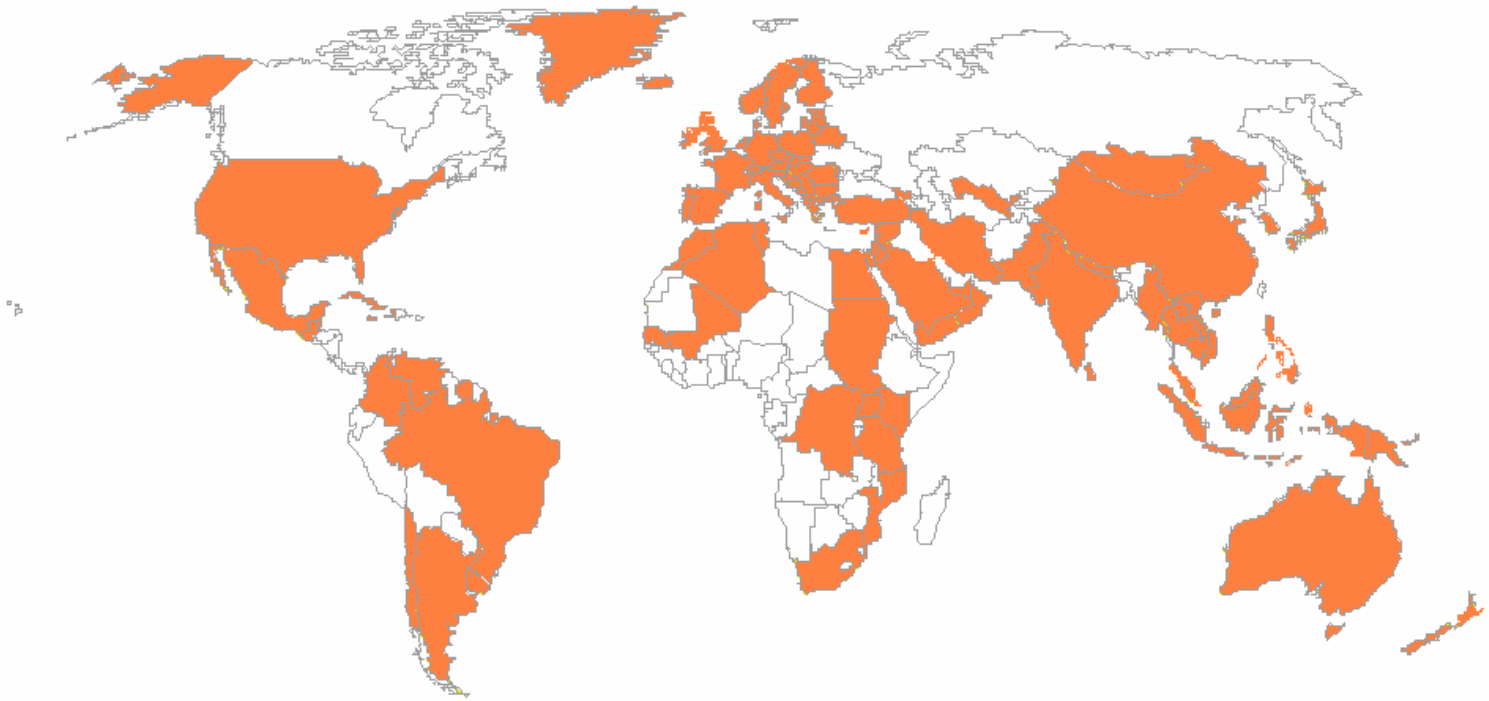
Member Institution Representative
- Maintain personal contact information
- Upload national data

Country Databank - data

The Member Institution representatives and General Institution representatives are asked to provide the following information annually

- Number of *Salmonella* isolates identified
- Number of *Salmonella* isolates serotyped
- Top 15 *Salmonella* serotypes identified
- Sources of *Salmonella* isolates
  - human
  - non-human (un-specified)
  - food
  - animal
  - feed
  - environment

Country Databank – last update 2002



103 countries have signed up to enter data to the database

Country Databank – last update 2003

Country Databank – last update 2007

Country Databank – latest update 2011

Members from 181 countries

Country Databank – access

via www.who.int/gfn

Country Databank - status

World Health Organization **GFN Country Databank**

Welcome to the Global Foodborne Infections Network (GFN) Country Databank. This databank provides access to information about **GFN institutions** and national data on the **Top 15 *Salmonella* serotypes** from human and non-human sources. Beginning in June 2001, these data will be reported annually from GFN member institutions. This databank also allows current GFN members to update their contact information and enter laboratory data. You can download an English or French guide for instructions on how to use the Country Databank.

Member Information
Search for information on current GFN members.

Data Summaries
View summaries of the Top 15 lists by year and geographic region. National data.

Data by Institution
Annual counts of most common serotypes from GFN institutions. Regional data.

Data Entry
Update contact information and enter Top 15 lists for your institution. [Members Only]

Submenues under this Main Menu will always have a WHO logo and a little house in top. **Clicking on the WHO-logo will bring you one level up** in the menu hierarchy, **clicking on the house will bring you back here**. In many places help is available by clicking on a

GFN Country Databank status report ...

On March 11, 2011, we have 1647 members from 181 countries,

- 171 Member Institution Representatives from 105 countries,
- 473 General Institution Representatives from 136 countries and
- 1003 General Members from 159 countries.

There have been supplied 1092 data sets from 84 countries,

- 915 National data sets from 66 countries and
- 177 Regional data sets from 36 countries.

Data in the CDB – example, top15-list

Country, Institution, Year, Biological origin	Total Salm. Count	Total Sero-typed	Rank	Serotype	Count	% of Total Sero-typed
Denmark, National Food Institute, DTU, 2008, Animal	711	689	1	Typhimurium	425	61.7
			2	Derby	109	15.8
			3	Anatum	30	4.4
			4	Infantis	23	3.3
			5	Indiana	15	2.2
			6	Dublin	13	1.9
			6	Kottbus	13	1.9
			8	Regent	12	1.7
			9	Livingstone	11	1.6
			10	Enteritidis	3	.4
			10	Newport	3	.4
			12	Agona	2	.3
			12	I 4,12:b:-	2	.3
			14	Mbandaka	1	.1
			14	Poona	1	.1
Denmark, National Food Institute, DTU, 2008, Food	210	187	1	Typhimurium	89	47.6

Data in the CDB – in total

In total by March 2011, national data:

2,055,970 isolates included in the CDB
(1,602,547 of which are from human origin)

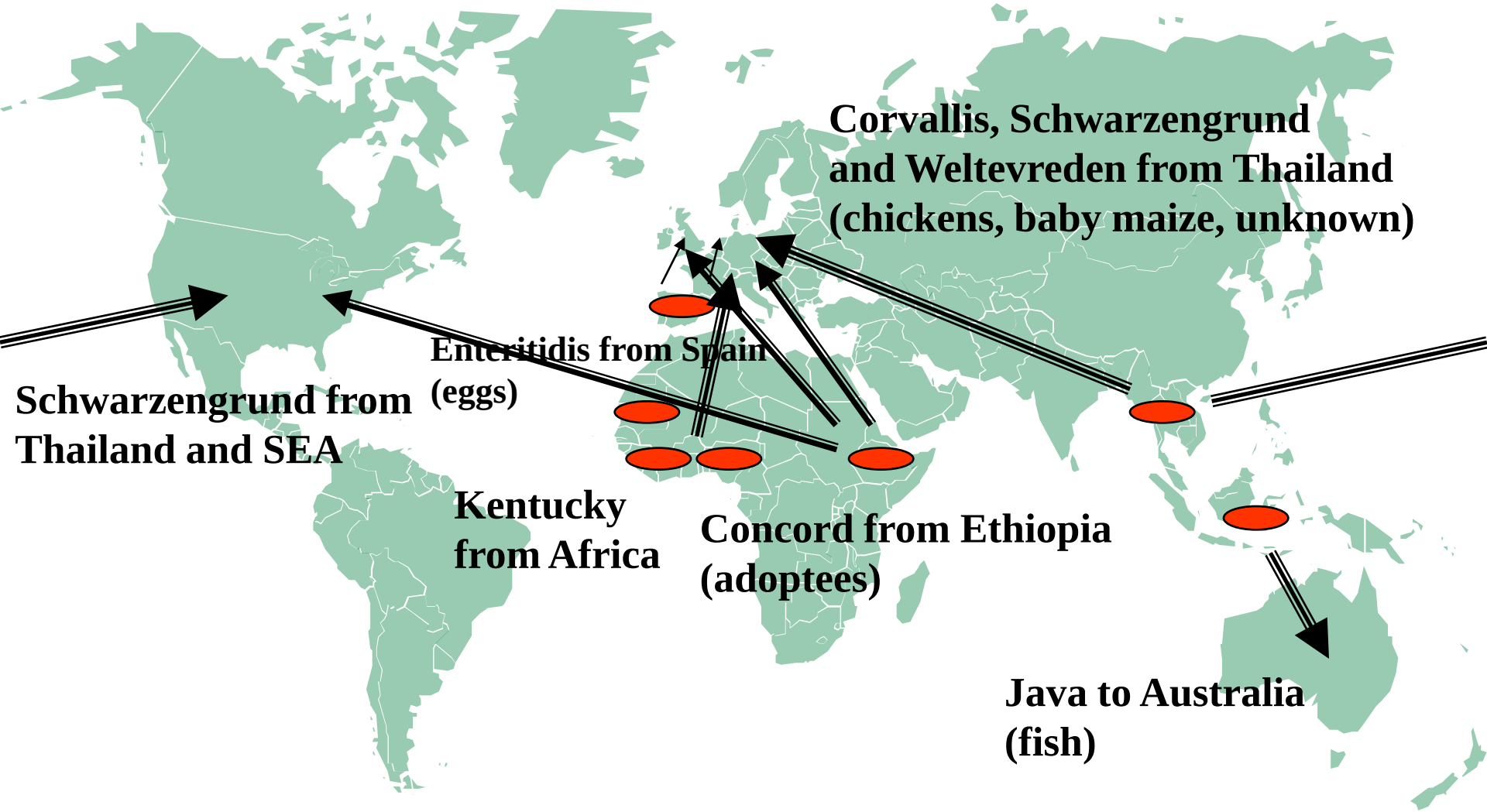
344 different serotypes are reported

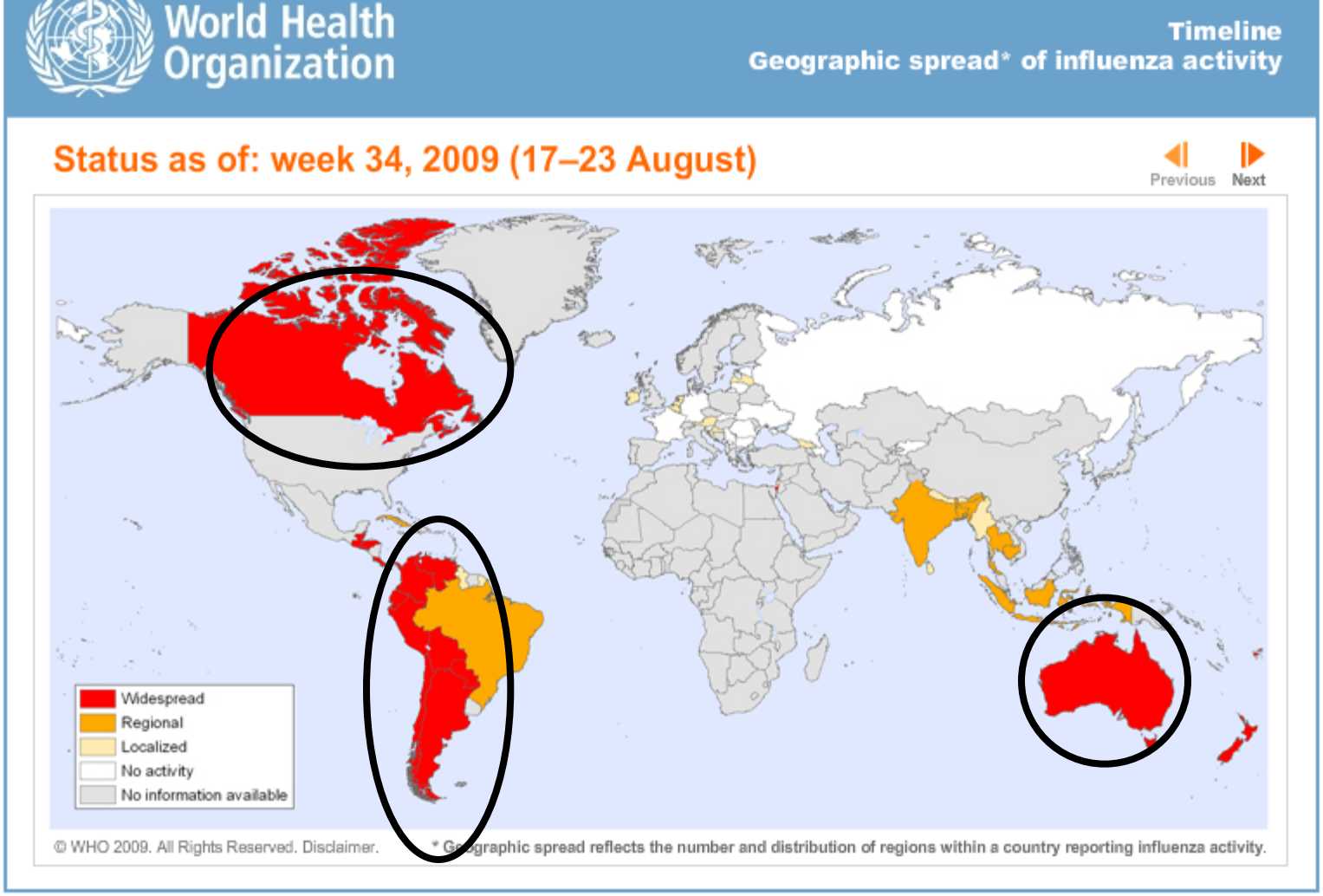
- 1,056,481 are *S.* Enteritidis
- 378,702 are *S.* Typhimurium

Members in the CDB – India

Institution	Member	Member type
Need On Social Institution - NGO	Sameer Srivastava	General member
Panbacy Fine Chemicals Ltd., Haridwar (U.A)	Vishal Upadhyay	General member
Peerless Hospital	Satadal Das	General institution representative
Post Graduate Institute of Medical Educ & Research	Vishal	General institution representative
Punjab State Council for Science & Technology	Alkesh Kandoria	General member
Pushpanjali Hospital, Agra	Lalitesh Pachauri	General member
Rajasthan Government	Chand Tak Gautam	General member
	Gaje Singh	General member
Rajendra Medical College	V. Pappa Rajendran	Member institution representative
SVIMS University	Dudipeta Vasu	General institution representative
Self employed - Homeopathic dispensery	Dr. Indrajit Banerjee	General member
Sengunthar arts & science college	- Bhanu	General member
Sri Lakshimi Clinic	P.V. Balaji Deekshitulu	General member
Subharti Dental College	Ruchir Garg	General member
Syed Ammal Engineering College	Barathi Raja	General member
TQS Global Mangement System	Radha Sharma	General member
	Nandei S.	General institution representative
The Drugless Practitioners Association	Kanwaljit singh	General institution representative

Examples of global epidemiology





Automatic detection of clusters in time and space

Aim

➡ ‘Real time’ global monitoring

To enable professional to know the

- Relative importance of pathogens
=> Target interventions

- Relative importance of reservoirs
=>Target interventions

- Trends over time
=> Effect of interventions

GFN Country Databank - upcoming

- Include more data
  - Other pathogens
  - AMR profiles
  - Chemical contaminants
- Explanatory factors
  - Consumption
  - Trade
  - Animal production
  - Meteorological data

Members make the CDB a useful tool

Members

- Update contact information if/when needed
- Submit institutional or national data once a year
- Encourage colleagues to sign up
- Kept updated through EDG-messages

Thanks for your attention!